

## PATENT COOPERATION TREATY

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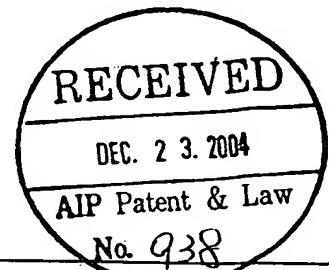
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28 May 2003 (28.05.2003)

Applicant

SEOUL SEMICONDUCTOR CO., LTD. et al

**IMPORTANT NOTICE**

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RÉPUBLIQUE DE CORÉE

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For an explanation as to the reason for this republication of the international application, reference is made to INID codes (15), (48) or (88) (*as the case may be*) on the front page of the attached document.

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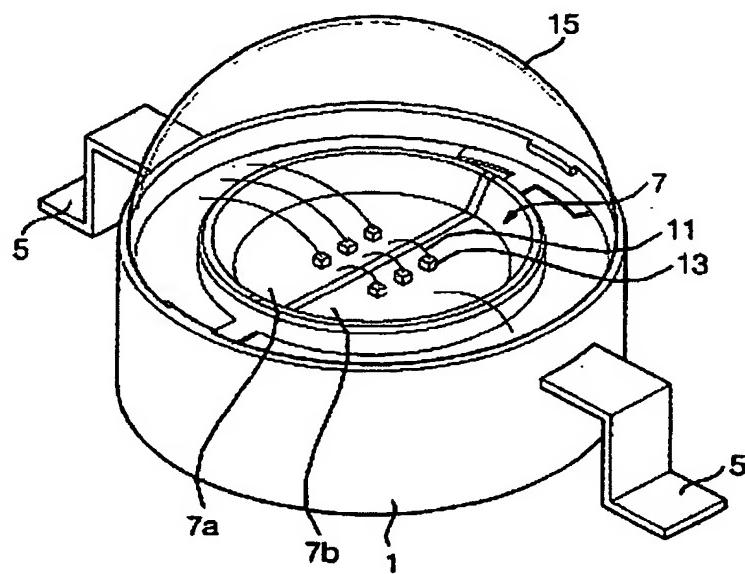
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(54) Title: LIGHT EMITTING DIODE PACKAGE AND LIGHT EMITTING DIODE SYSTEM HAVING AT LEAST TWO HEAT SINKS



(57) Abstract: There is provided a light emitting diode package having at least two heat sinks. The light emitting diode package includes a main body, at least two lead terminals fixed to the main body, and at least two heat sinks of electrically and thermally conductive materials, the heat sinks being fixed to the main body. The at least two heat sinks are separated from each other. Thus, high luminous power can be obtained mounting a plurality of light emitting diode dies in one LED package. Further, it is possible to embody polychromatic lights mounting LED dies emitting different wavelengths of light each other in the LED package.



Date of publication of the amended claims: 14 April 2005

*For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*

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**AMENDED CLAIMS**

[received by the International Bureau on 02 November 2004 (02.11.04);  
original claims 1-14, replaced by amended claims 1-14]

**Claims**

1. A high power light emitting diode package comprising:

a main body;

at least two lead terminals fixed to the main body; and

5 at least two heat sinks of electrically and thermally conductive materials, the heat sinks being separated from each other and fixed to the main body.

2. The package of claim 1, wherein each of the at least two heat sinks has a reflective surface extended from an upper surface thereof.

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3. The package of claim 1, wherein the at least two heat sinks are a pair.

4. The package of claim 3, further comprising:

15 at least one light emitting diode die mounted on upper surfaces of the at least two heat sinks, the die being directly and electrically connected to the heat sinks through a surface of the die.

5. The package of claim 4, further comprising:

20 bonding wires electrically connecting the at least two lead terminals, the at least two heat sinks and the at least one light emitting diode die.

6. The package of claim 4, further comprising:

a lens attached to the main body, the lens enclosing the at least one light emitting diode die.

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7. The package of claim 6, wherein the lens includes an optically transparent material which is directly contacted with the at least one light emitting diode die.

8. The package of claim 4, further comprising:

30 a fluorescent material converting the wavelength of light emitted from the at least one light emitting diode die.

9. The package of claim 1, further comprising:

light emitting diode dies mounted on the respective heat sinks, the light emitting diode dies emitting different wavelengths of light.

- 5        10. The package of claim 9, wherein the at least two lead terminals include:  
lead terminals electrically connected to the at least two heat sinks respectively;  
and  
a common lead terminal electrically connected to all of the at least two heat sinks.

- 10      11. The package of claim 10, further comprising:  
an additional heat sink; and  
a zener diode mounted on the additional heat sink.

- 15      12. The package of claim 9, wherein the light emitting diode dies include light emitting diode dies emitting a first wavelength of light, a second wavelength of light and a third wavelength of light, respectively.

- 20      13. The package of claim 12, wherein the first wavelength, the second wavelength and the third wavelength are red wavelength, green wavelength and blue wavelength, respectively.

- 25      14. A light emitting diode system comprising:  
the light emitting diode package according to claim 10 or claim 11; and  
a controller for controlling the electric power supplied to the light emitting diode package,  
wherein the controller controls the amount of the current supplied to the respective heat sinks.

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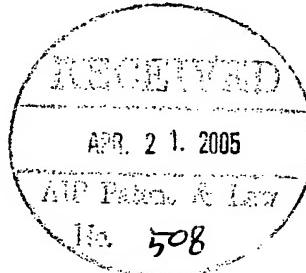
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